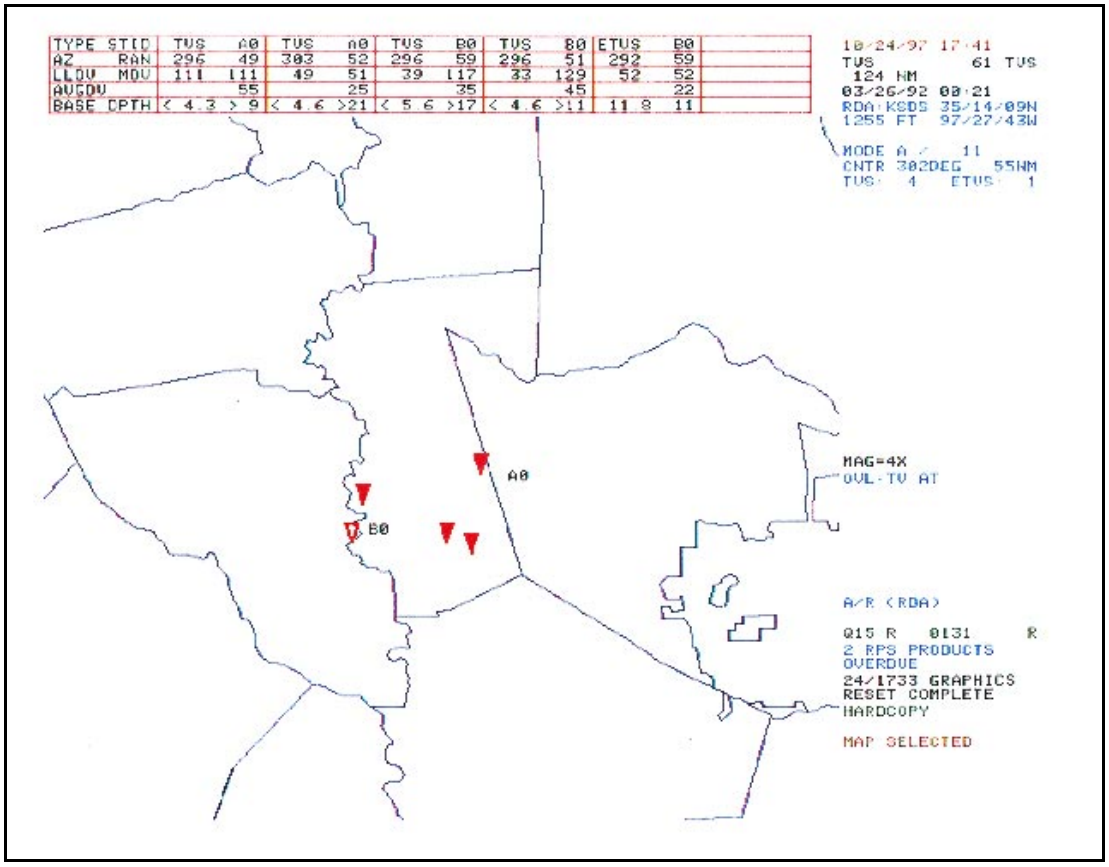
Build 10 Preview



Operational Support Facility

Produced By:
Operations Training Branch

OTB Build 10 Focal Points:
Jim Keeney / Dave Floyd

SYNOPSIS OF IMPORTANT WSR-88D CHANGES DUE TO THE IMPLEMENTATION OF SOFTWARE BUILD 10.0

The following pages are a preliminary listing of significant changes to the operation of the WSR-88D, which will occur with the implementation of software Build 10.0. This software is scheduled to be released into field operations in August of 1998.

While it is possible that some of the functions listed on the following pages will be modified before the final software release, the information contained in these pages represents the current state of Build 10.0.

More detailed updates of PUP/RPG/UCP changes will be made available after final engineering, software and operational testing is completed.

WSR-88D Operational Support Facility
Operations Training Branch
Latest Revision: 01-01-98

c:\dave\build10\preview\preview.wpd

Build 10 Preview

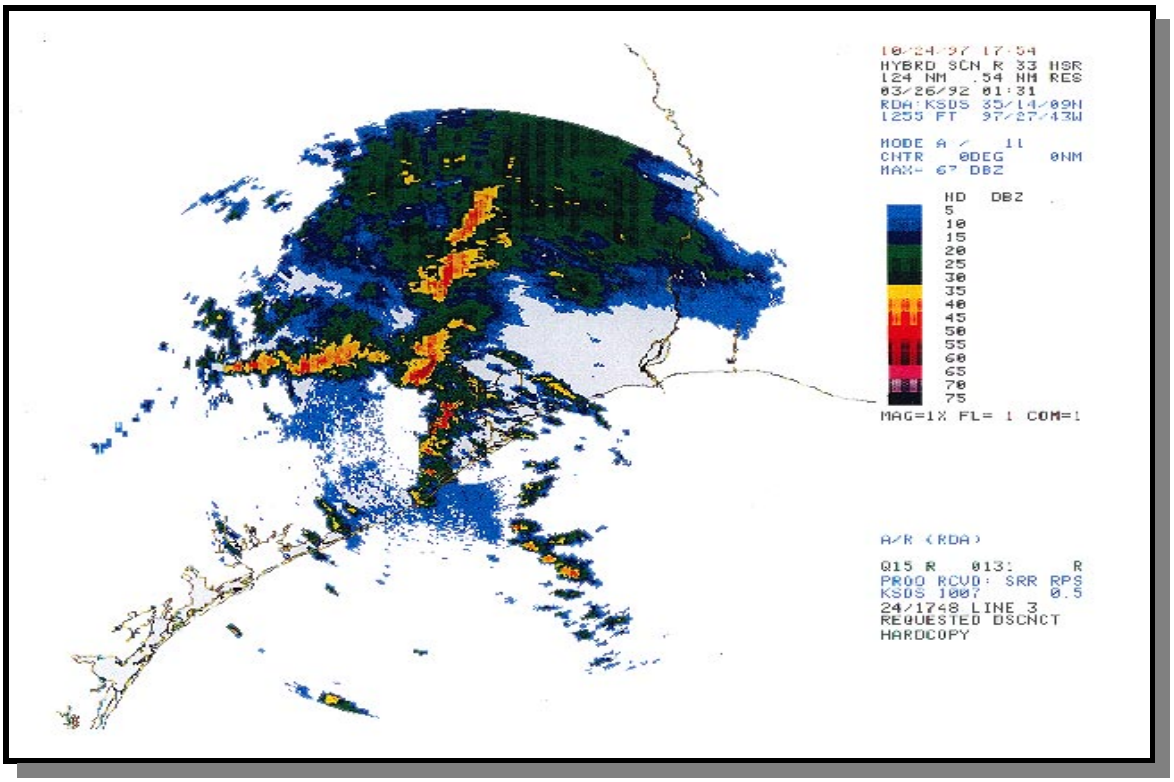
Part 1 ... Product / Algorithm Changes

NEW PRODUCT: HYBRID SCAN REFLECTIVITY

The Hybrid Scan Reflectivity product (mnemonic HSR, ID# 33) is a 16-data level reflectivity product based on data from the lowest four elevation angles. The addition of the HSR product will allow WSR-88D operators to view the reflectivity data used as input in the generation of the Radar Coded Message (RCM), as well as the precipitation products. This will assist operators in determining product accuracy.

The RPG has always generated a hybrid scan reflectivity internally before creating the precipitation products, and more recently this data has been used in the generation of the RCM product. Build 10 is making it possible to display this information at the PUP. The hybrid scan utilizes data from higher tilts close to the RDA and lower tilts at greater ranges to minimize the changes in beam height with range from the RDA. In addition, prior to generation of this product, corrections are made for beam blockage, reflectivity outliers, isolated reflectivity and ground clutter due to AP.

A sample HSR product is shown below.

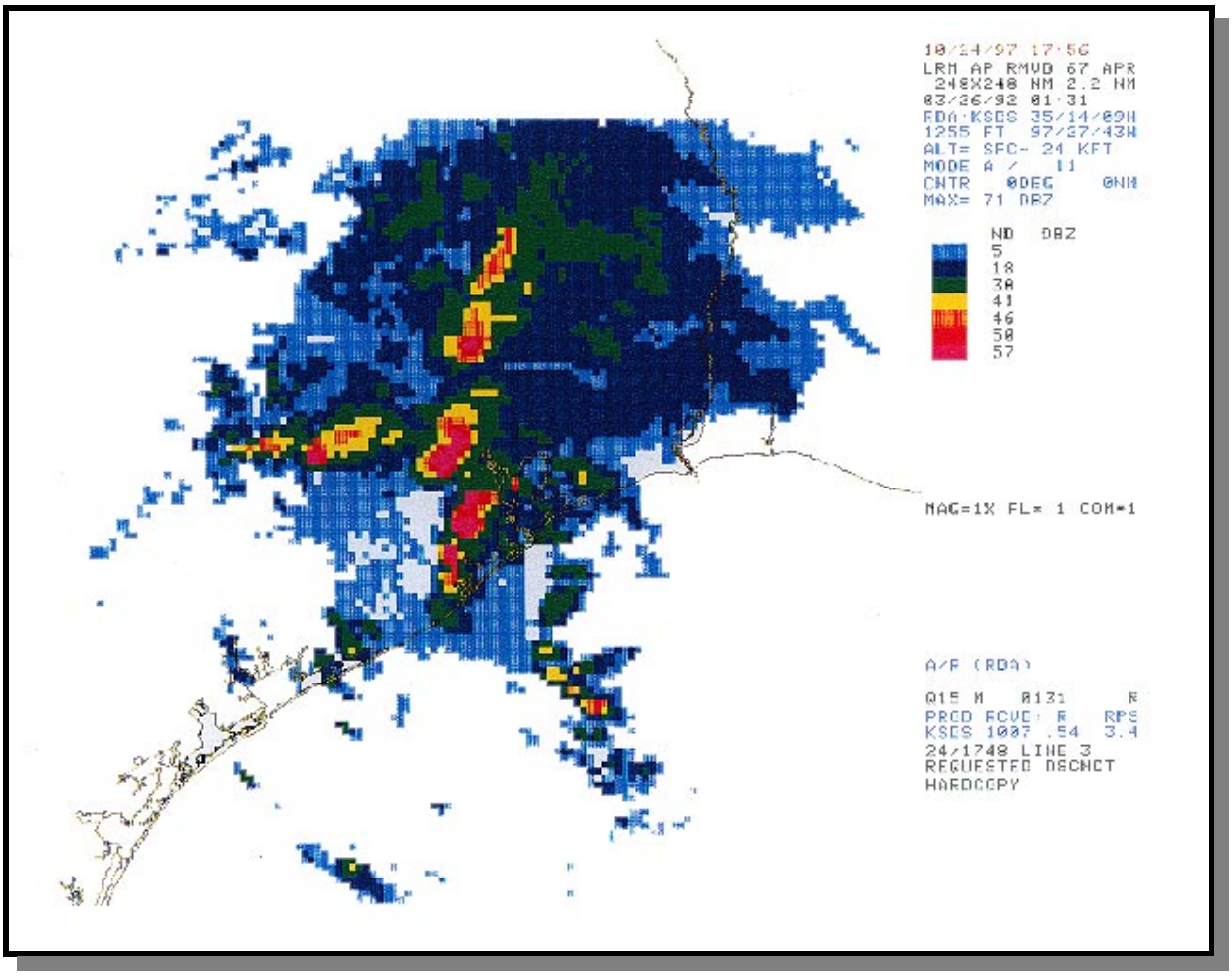


NEW PRODUCT: ANOMALOUS PROPAGATION REMOVED

The Anomalous Propagation Removed product (mnemonic APR, ID# 67) is an 8-data level reflectivity display similar in appearance to the existing Layer Reflectivity Maximum products. It is derived from the output of an algorithm which processes base reflectivity, velocity and spectrum width data with the goal of distinguishing between meteorological returns and ground clutter/AP.

The algorithm, developed at Lincoln Laboratory, is called a clutter editor, and is based on the observation that ground targets tend to affect mainly the lowest antenna tilts, and typically are associated with low radial velocity and low spectrum width. The algorithm will generate a Surface to 24,000 ft Layer Reflectivity Maximum product every volume scan with algorithm-identified ground targets removed.

A sample APR product is shown below.



NEW ALGORITHM: TORNADO DETECTION ALGORITHM

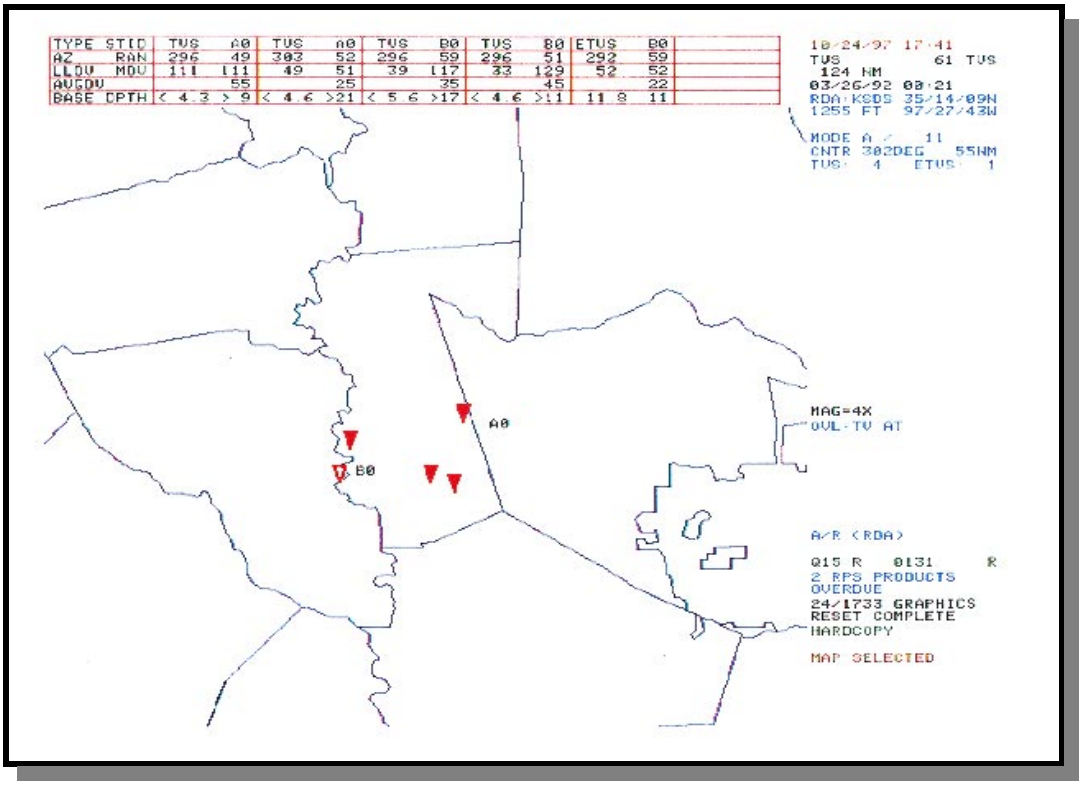
Build 10 will introduce a new Tornado Detection Algorithm (TDA) that will replace the current Tornadic Vortex Signature Algorithm (TVS). The algorithm name is changing from TVS to TDA, but the final product will continue to be called the TVS (mnemonic TVS, ID# 61).

There may be a change in how the TDA output is applied operationally. The TVS algorithm has a very low false alarm rate, but also a very low probability of detection. The TDA algorithm will allow operators to choose parameter settings resulting in varying output, ranging from more detections (and more false alarms), to fewer detections (and fewer false alarms).

In addition to detection process changes, the appearance of the TVS product will also change. The size of the red inverted triangle will be increased slightly, and a new OPEN red triangle will be displayed for elevated TVS (ETVS) detections. An elevated TVS is the same as a TVS except that its base is above 600 meters and 1.0 degree elevation. The operator will have the ability to enable/disable the display of ETVS detections by selecting an option at the PUP Applications Terminal.

The graphic attribute table will display new information from the TDA output, including circulation base and depth, maximum low-level gate-to-gate velocity difference, maximum gate-to-gate velocity difference, and average gate-to-gate velocity difference. (All velocity differences will be in knots). TDA does not require input from the mesocyclone algorithm, and TVS detections can occur without the existence of an algorithm-identified mesocyclone.

A sample TVS product is shown below.



LOWER BOUNDARY OF LAYER COMPOSITE REFLECTIVITY PRODUCTS MAY BE MODIFIED WITH URC APPROVAL

The ability to specify the lower boundary height for the lowest layer of the Layer Composite Reflectivity products (LRM and LRA) will exist in Build 10. The Level Of Change Authority for this modification is the Unit Radar Committee. Field sites will have the capability to vary the thickness of the lowest layer of the LRM and LRA products, provided the layer thickness is at least 6000 feet.

Part 2 ... PUP Changes

NEW UTILITY: BACKFILE

A new utility called BACKFILE will be available at the System Console of the RDA, RPG and PUP. This utility will copy files from the hard disk to a SCSI tape using BACKUP. The benefit of this command is that commonly performed backups can be executed with a single command, with less keyboard entry and therefore less likelihood of error. The operator will be able to copy the default list of system files commonly backed up, or enter specific filenames from the keyboard. The default file list is unique to the RDA, RPG and PUP.

TIME LAPSE DEFAULT SET TO AUTOMATIC CONTINUOUS LOOP

This Build 10 modification will reduce the number of steps required for an operator to invoke a Time Lapse and keep it active. When a Time Lapse is selected using current software, the images loop once and then halt, requiring the operator to select CONTINUOUS LOOP to keep the Time Lapse active. The Build 10 default has been changed so that any Time Lapse will automatically remain active in a continuous looping mode. Since there is no longer a need to select CONTINUOUS LOOP from the tablet, this box will be deactivated.

SRM PRODUCTS READ FROM OPTICAL DISK WILL TIME LAPSE

Currently, SRM products read from optical disk may or may not time lapse, depending on when they were written to optical disk. The products are actually in the database, but the Time Lapse function will not place them into a loop. Build 10 will correct this problem so that all SRM products read from optical disk can be used with the Time Lapse function.

SLICE PRODUCTS WILL DEFAULT TO LOWEST ELEVATION ANGLE AND 0.54 NM RESOLUTION

Build 10 will change the display default for 0.54 nm resolution elevation products from the most current, to the most current at the lowest elevation angle. This change will provide easier access to the most recent 0.5 degree, 0.54 nm resolution products.

With existing software, selection of an elevation product displays the most recently received product of that type. As a result, operators are never sure which resolution or elevation angle will appear. Experience has indicated that most users wish to display products at the 0.5 degree antenna tilt with 0.54 nm resolution for initial analysis. The Build 10 change will make it easier for operators to view Base Reflectivity, Base Velocity, Base Spectrum Width and Storm-Relative Mean Radial Velocity with these parameters. The following products will <u>not</u> be affected by this change: 1) Elevation products which are not displayed with a 0.54 nm resolution (e.g. SRR), 2) Elevation products for which a 0.54 nm resolution is not stored in the PUP database, and 3) Those products which do not display information for specific elevation angles (e.g. VIL, CR).

ARCHIVE IV COMMANDS ACCEPTED

Currently, if an archive write function does not complete due to an error condition, the system will display the message WAIT FOR COMPLETION OF COMMAND, and will not accept any further archive commands. To correct the problem, a PUPDOWN must be issued. Build 10 will perform the proper recovery from this error condition so the archive function will accept archive commands, even though an error has occurred.

OTHER ARCHIVE IV PROBLEMS SOLVED

In Build 9, if an operator issues a read or write command, immediately followed by a cancel archive command, the system will execute the read or write command anyway. Build 10 will allow the archive function to be properly canceled when commanded to do so by the operator.

Also, with current software, if an error occurs during auto-archive, it will leave the system in a condition where the archive function ceases to operate, and a PUPDOWN command must be issued. Build 10 will correct the problem by allowing the operator to start the archive function without bringing the system down.

PUP WILL NO LONGER DELETE REQUESTS FROM DIAL-OUT QUEUE DURING LINE ERROR CONDITIONS

When a communication line error is detected on a dial-out line, the PUP either clears the dial-out queue or performs a selective clearing of requests depending on the line error encountered. For sites with multiple dial-out lines (such as RFCs), an error on one line may cause the software to clear out the requests from both lines. This leads to an unnecessary loss of requests which could have been transmitted successfully over another dial-out line. Software changes have been made such that the dial-out queue will not be deleted.

PUP DIAL-OUT LINE WILL NO LONGER STAY CONNECTED FOR AN EXCESSIVE PERIOD OF TIME

If the PUP is connected to an RPG via a dial-out line, and data flow is non-existent, the PUP can stay connected to the RPG for an excessive amount of time. Currently, the PUP waits 12 minutes before reporting a product overdue. If the product does not arrive within 12 minutes, the PUP then queries the dial-out queue and processes the next request and again waits up to 12 minutes. This process will continue until all requests have been satisfied. Software has been changed so that if the PUP does not receive a general status message from a remote RPG, an automatic disconnect will be issued.

ABILITY TO SELECT A STORM FROM ANY GRAPHIC ATTRIBUTE TABLE

In Build 10, the operator will be able to select a storm cell of interest by placing the cursor on the appropriate row or column in the graphic attribute table and pressing the puck button. Once the storm is selected, the software will set the cursor position to the AZRAN value of the cell. After selection of the cell, the operator can then perform the functions for CELL TRENDS, RECENTER/MAGNIFY, AZRAN SELECT, and CURSOR HOME DEFINE. This modification will make it easier for the operator to interrogate a storm of interest.

MORE DETAILED INFORMATION WILL BE AVAILABLE WHEN EXAMINING USER FUNCTIONS

At the current time, the only information provided while examining a User Function is the root command that was entered. For example, when requesting a Base Reflectivity product, the only information provided is D,G,R. There is no way of knowing the data levels, resolution, elevation angle, RPG, or time that was input.

New Build 10 software will allow this data to be displayed after executing the U,EXA,<UF#> command. This new information appears in the same format as it was entered on the D,G,<prod-name> screen. There is no need to redefine existing User Functions to see the additional information.

APUP COMMUNICATIONS WILL BE CHANGED TO 14.4Kbps ... PUP RPS LISTS WILL BE INCREASED TO 31 PRODUCTS

Narrowband communication speeds are being upgraded from 9.6Kbps to 14.4Kbps, which is the maximum allowed with existing hardware. This will result in reduced transmission time for narrowband data. However, outdated telephone equipment will limit the ability to support the faster speeds at some locations. As a result, some narrowband interfaces must remain at 9.6Kbps.

An additional benefit of higher narrowband communication speeds will be to increase the product capacity of the Current and Adaptation RPS Lists. Implementation of Build 10 software will allow for a total of 31 products to be placed on the RPS lists, compared with the existing limit of 20 products. (The maximum number of products for RPGOPs will remain at 50). Operators should be aware of the increased possibility of narrowband load-shedding with the ability to add more products.

TERMINATION OF THE TURBULENCE ALGORITHM AND THE LAYER COMPOSITE TURBULENCE PRODUCTS

Implementation of Build 10 will eliminate the Layer Composite Turbulence (Average and Maximum) products. The deactivated products will not be allowed on the RPS list and cannot be displayed via a one-time request. Turbulence products from pre-Build 10 Archive III and IV disks will not be displayed.

LINEAR MOTION DISPLAY CLOCK TIMES CORRECTED

In Build 9, the Linear Motion function may display the top of the hour minutes as “60" instead of “00". For example, a time that should be displayed as 1900, in some cases, will be displayed as 1860. This oversight has been corrected in Build 10, and the Linear Motion display will now show the top of the hour clock time as XX:00.

PRODUCT RECEIVED MESSAGES WILL BE DISPLAYED IN TRAINING MODE

Products read from an optical disk while in training mode are supposed to display a PRODUCT RECEIVED message on the RPG Product Status lines at the graphic and alphanumeric displays. A software error in the PUP archive task has prevented the display of this message. Build 10 will correct the error and allow proper display of the PRODUCT RECEIVED message while in Training Mode.

Another problem occurring during training mode involves “paired” products (graphic products having an corresponding alphanumeric product). The latest version of these products are not being displayed when using the Graphic Tablet in Training Mode. In addition, the PRODUCT RECEIVED message does not appear as these products are being read from optical disk. Software changes are now in place to correct these problems.

Part 3 ... UCP Changes

NEW ARCHIVE II STATUS MESSAGES WILL BE DISPLAYED AT THE UCP

New status messages are being added to provide a better description of the current state of the Archive II device at the RDA. The three new status terms are: 1) FST FWD indicating the tape device is fast forwarding, 2) TAPE XFR indicating the archive device is swapping tapes in the jukebox, and 3) CK LABEL meaning the archive device is checking a tape label. In addition, a tape number is also included with the status message (e.g. FST FWD 01 means tape #1 in the jukebox is being fast forwarded).

NEW UTILITY: BACKFILE

A new utility called BACKFILE will be available at the System Console of the RDA, RPG and PUP. This utility will copy files from the hard disk to a SCSI tape using BACKUP. The benefit of this command is that commonly performed backups can be executed with a single command, with less keyboard entry and therefore less likelihood of error. The operator can choose to copy the default list of system files commonly backed up, or enter specific filenames from the keyboard. The default file list is unique to the RDA, RPG and PUP.